

## ABSTRACT

The invention refers to an optical fiber transmission system, comprising a transmitter terminal 10 launching an optical signal into a fiber line, which is guiding the signal to a receiver terminal on the far end of the fiber line. The signal composed of a multitude of bit-patterns at different wavelength channels within a given total bandwidth of wavelengths. In order to increase the optical power budget of the system, the fiber line consists, in its first section, of at least two branches 12a, 12b. The transmitter 10 launches a separate part of the optical signal into each one of the branches 12a, 12b. Each part of the signal is composed of a sub-multitude of the bit-patterns at neighbouring wavelength channels within non-overlapping bandwidth domains. The parts of the signal are multiplexed together into one unique fiber 14 by means of a multiplexer station 13 not closer to said transmitter terminal 10, than the sum of the total optical powers guided by each of the branches 12a, 12b plus the losses due to the multiplexing has decreased below the total optical power, that is associated with a maximum optical power budget in said unique fiber 14 guiding the full bandwidth of wavelengths.

20

Figure to publish : Figure 5